Morphological and Phonological Lenition in Manx

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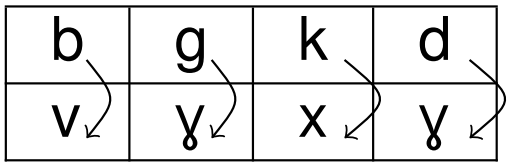
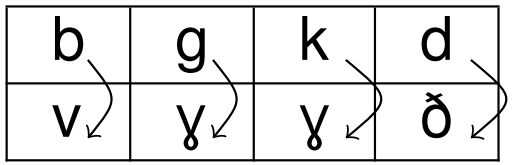
M-Lenition



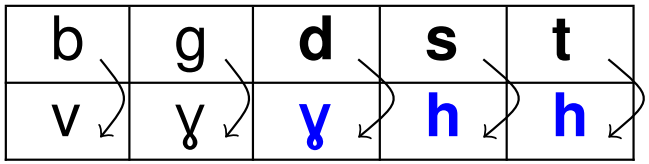
P-Lenition



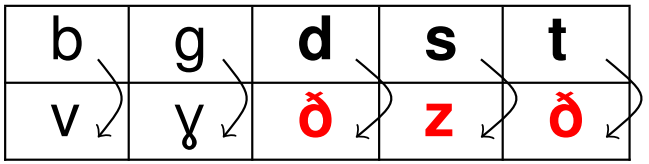
$\Rightarrow$ Both produce fricatives (among other things)

Green's Dilemma

Morphological



Phonological



⇒ Both produce **partially different** fricatives

(Green, 2006)

Green's Conclusion

- M-Lenition in Manx
  cannot be due to
  featural affixation + phonology

- It is purely morphological

(Green, 2006)

Claim of this Talk

Differences between M-Lenition and P-Lenition are due to:

- the affixation of a floating grid mark in M-Lenition
- the fact that M-Lenition is word-initial whereas P-Lenition is intervocalic

Background

Manx

- Celtic language of the Goidelic group closely related to Irish
- Formerly spoken on the Isle of Man
  The last native speaker dies 1974

The Consonant System of Manx

	Plain			Palatalized	
Voiceless stops	p	t	k	t′	k′
Voiced stops	b	d	g	d′	g′
Voiceless fricatives	f	s	x h	s′	x′
Voiced fricatives	v	ð z	ɣ	z′	
Glides	w				j
Nasals	m	n	ŋ	n′	ŋ′
Liquids		l r		l′ r′	

The Framework

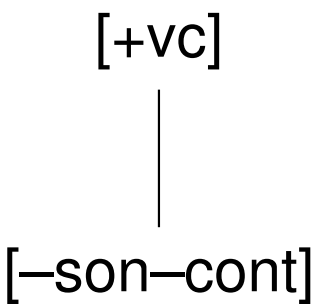
- Stratal Optimality Theory
  (Bermudez-Otero, 2009)
- Simplistic Colored Containment Theory
  (Trommer, 2008 departing from van Oostendorp, 2004)

Simplistic Colored Containment Theory

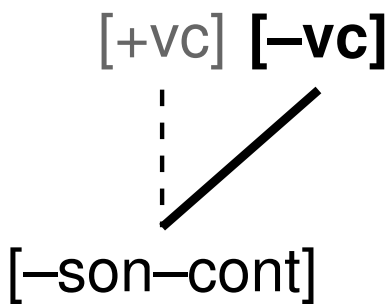
- Input structure cannot be literally deleted in outputs
  It can just be rendered phonetically invisible
- Every morpheme has a unique morphological color
  All phonological material belonging to the morpheme bears this colour
- Gen cannot change morphological color

Simplistic Colored Containment Theory

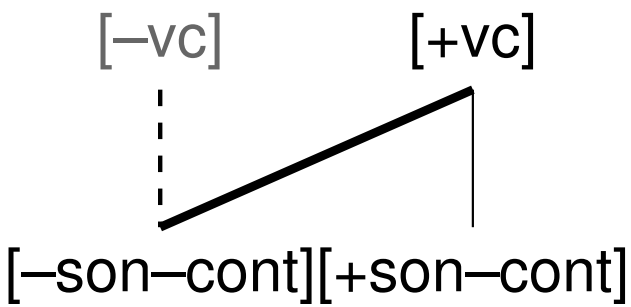
Underlying /t/
Surfacing [t]



Underlying /d/
Surfacing [t]



Underlying /tn/
Surfacing [dn]



Realize Morpheme

For every morpheme in the input,

some phonological element

should be present in the output.

≈

Every morphological color *C* in an output form

should be detectable by at least

one phonetically visible phonological element of color *C*

(≈ van Oostendorp, 2005 ≈ Akinlabi, 1996)

M-Lenition as Aperture Affixation

Morphological Lenition in Manx

bedn woman	ən the	**v**edn woman	**Stop**	⇒	**Fricative**
t^{h}ai house	mə my	**h**ai house’	**Stop**	⇒	**Laryngeal**
mu:r big	bedn woman	**v**u:r big	**Nasal**	⇒	**Fricative**
su:l eye	mə my	**h**u:l eye	**Fricative**	⇒	**Laryngeal**
fai homefield	mosən in the	ai homefield	**Fricative**	⇒	**Ø**

(Broderick, 1985)

Morphological Lenition in Manx

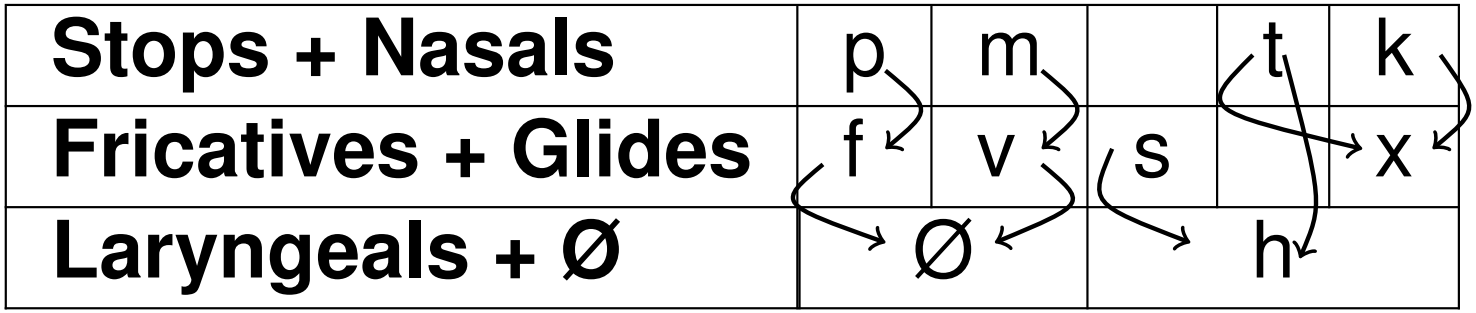
f	Ø
s	h
t	x ~ h
k	x ~ h
p	f
d	ɣ
g	ɣ
b	v ~ w
m	v ~ w
n	no change
l	no change
r	no change
vowel	no change

Stops and m get [+continuant]

s, t & k debuccalize (optionally)

Coronal obstruents get velar

M-Lenition as a Chain Shift



Sonority by Multi-valued Features (Trommer, 2009)

Inherent Voicing Scale

	Representation	Abbreviation
Voiceless Obstruents & Laryngeals:	son:oo	son:
Voiced Obstruents:	son:xo	son:x^1
Sonorants:	son:xx	son:x^2

Aperture Scale

	Representation	Abbreviation
Nasal and Oral Stops:	ap:oo	ap:
Fricatives and Approximants:	ap:xo	ap:x^1
Laryngeals (and Ø):	ap:xx	ap:x^2

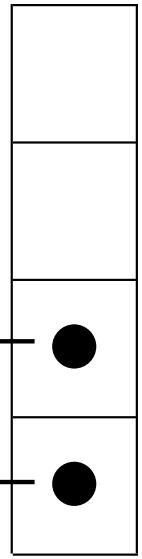
(cf. Gnanadesikan, 1997 and de Lacy, 2002)

Multi-Value Representation of Consonantal Aperture

	Representation	Abbreviation
Nasal and Oral Stops:	ap:oo	ap:
Fricatives and Approximants:	ap:xo	ap:x[1]
Laryngeals (and Ø):	ap:xx	ap:x[2]

The Internal Structure of Multiple Feature Values

XXOO = X X



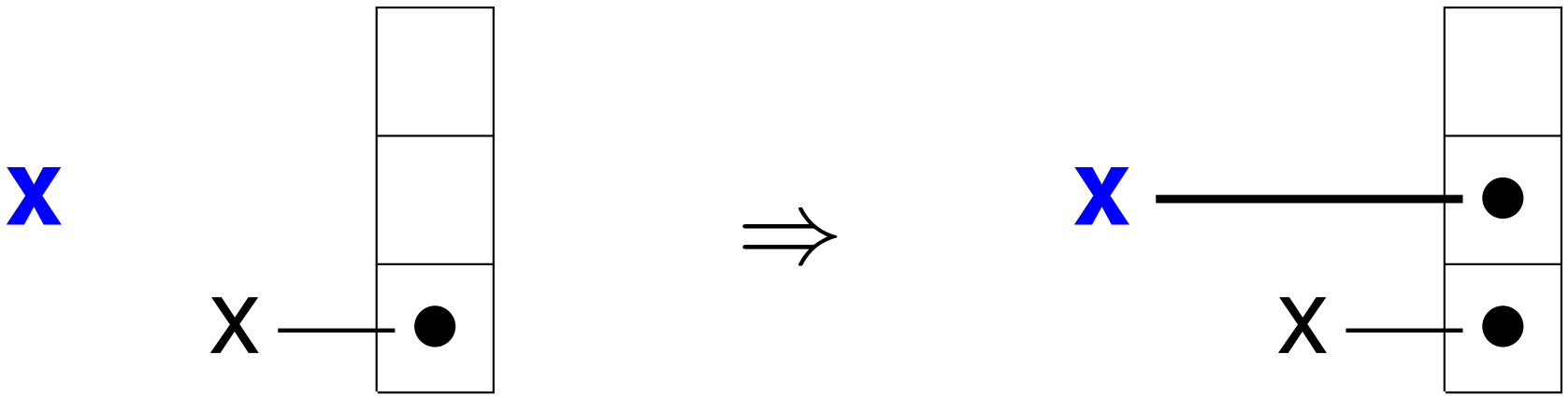
Ø-Aperture

- Ø-Aperture of consonants corresponds to segments with no overt oral articulator
- If such sounds have a laryngeal articulator, a glottal sound results,
  otherwise the sound is phonetically Ø

The Lenition Morpheme

$$L \longleftrightarrow X_{ap}$$

Lenition as Affixation of a Grid Mark



Analysis

- Attachment of x_{ap} to a nasal/stop, shifts this by 1 in aperture to a fricative
- Attachment of x_{ap} to a fricative, shifts this by 1 to h/Ø
- Markedness/faithfulness constraints may lead to additional aperture augmentation

Constraints Triggering M-Lenition

REALIZE MORPHEME

ID [+son]	A phonetically [+sonorant] sound should also be morphologically [+sonorant] (Obstruents should not get sonorants/laryngeals)
MAX LAR	Maintain underlying LAR(YNGEAL) nodes (as aspiration or as laryngeal consonants)
MAX LAB	Maintain underlying LAB(IAL) nodes
MAX COR	Maintain underlying COR(onal) nodes

M-Lenition of [p] to [f] (extremely simplified)

Input: x_{ap} + [ap: –cont –vc LAB] (pa ⇒ fa)

		RM	ID [+son]
	a. [ap: –cont –vc LAB] (p)	*!	
☞	b. [ap:x[1] +cont –vc LAB] (f)		
	c. [ap:x[2] +cont –vc LAB] (Ø)		*!

M-Lenition of [f] to [Ø] (extremely simplified)

Input: x_{ap} + [ap:x^{1} +cont –vc LAB] (fa ⇒ Øa)

	RM	ID [+son]
a. [ap:x^{1} +cont –vc LAB] (f)	*!	
☞ c. [ap:x^{2} +cont –vc LAB] (Ø)		*

M-Lenition of [k] to [x]/[h] (slightly simplified)

Input: x_{ap} + [ap: –cont –vc DOR] (ka ⇒ xa/ha)

	RM	ID [+son]	MAX LAR
a. [ap: –cont –vc DOR] (k)	*!		
☞ b. [ap:x[1] +cont –vc DOR] (x)			*
☞ c. [ap:x[2] +cont –vc DOR] (h)		*	

M-Lenition of [p] to [f] (full version)

Input: x_{ap} + [ap: –cont –vc LAB] (pa ⇒ fa)

	RM	MAX LAB	ID [+son]	MAX LAR	MAX COR
a. [ap: –cont –vc LAB] (p)	*!				
☞ b. [ap:x[1] +cont –vc LAB] (f)			*	*	
c. [ap:x[2] +cont –vc LAB] (Ø)		*!		*	

M-Lenition of [f] to [Ø] (full version)

Input: x_{ap} + [ap:x^{1} +cont –vc LAB] (fa ⇒ Øa)

	RM	MAX LAB	ID [+son]	MAX LAR	MAX COR
a. [ap:x^{1} +cont –vc LAB] (f)	*!			*	
☞ c. [ap:x^{2} +cont –vc LAB] (Ø)		*	*	*	

Phonological (Intervocalic) Lenition in Manx

a.	ta**p**i	~	ta**b**i	~	ta**v**i	‘quick’
b.	bra**t**ag	~	bra**d**ag	~	bra**ð**ag	‘flag’
c.	fi:**k**əl	~	fi:**g**əl	~	fi:**ɣ**əl	‘tooth’
d.			t^{j}i**b**ərt	~	t^{j}i**v**ərt	‘a well’
e.			e**d**ən	~	e**ð**ən	‘face’
f.			ru**g**ət	~	ru**ɣ**t	‘born’
g.	pre:**s**ən		~		pre:**z**ən/pre:**ð**ən	‘potatoes’

Phonological (Intervocalic) Lenition in Manx

f	–
s	z ~ ð
t	d ~ ð
k	g ~ ɣ
p	b ~ v
d	ð
g	ɣ
b	v
m	no change
n	no change
l	no change
r	no change

([f] doesn't occur in word-medial position)

Voiceless stops get voiced stops or fricatives

Voiced stops get voiced fricatives

General Constraints on P-Lenition

V_V $\Rightarrow$ B Intervocalic consonants should be voiced

V_V $\Rightarrow$ F Intervocalic obstruents should be fricatives

ID [+cont] A phonetically [+continuant] sound should also be morphologically [+continuant]

Intervocalic Voicing and Spirantization

Input: aka (with Variation)

	V_V⇒B	V_V⇒F	ID [+cont]
a. aka	*!	*	
☞ b. aga		*	
c. axa	*!		*
☞ d. aɣa			*

Input: aka (without Variation)

	V_V⇒B	V_V⇒F	ID [+cont]
a. aka	*!	*	
b. aga		*!	
c. axa	*!		*
☞ d. aɣa			*

Constraints on Coronal Fricatives

Z	⇒	V_	Voiced coronal fricatives should be post-sonorant (form a voicing span with a preceding sonorant)
ID [+strid]			A phonetically [+strident] sound should also be morphologically [+strident]

P-Lenition of Coronals

Input: ata

	Z⇒V_	ID [+strid]	V_V⇒B	V_V⇒F	ID [+cont]
a. ata			*!	*	
☞ b. ada				*	
c. asa		*!	*		*
d. aza		*!			*
☞ e. aða					*

Input: asa

	Z⇒V_	ID [+strid]	V_V⇒B	V_V⇒F	ID [+cont]
a. asa			*!		
☞ c. aza					
☞ d. aða					

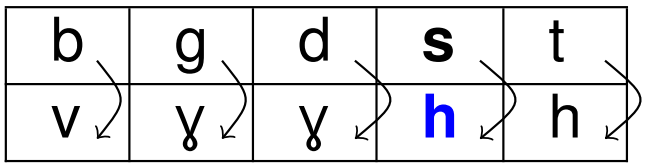
Differences of Phonological & Morphological Lenition

Differences of Phonological & Morphological Lenition

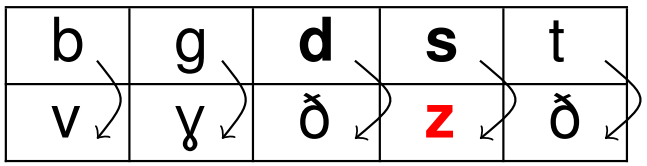
- M-Lenition debuccalizes fricatives
  P-Lenition does not
- M-Lenition debuccalizes stops
  P-Lenition does not
- M-Lenition changes coronals to dorsals
  P-Lenition does not

M-Lenition Debuccalizes Fricatives
P-Lenition does not

M-Lenition



P-Lenition



Why M-Lenition Debuccalizes Fricatives and P-Lenition does not

- M-Lenition involves augmentation of aperture
  The only way to augment aperture of a fricative is debuccalization

- P-Lenition is triggered by constraints requiring voiced consonants
  Debuccalization produces unvoiced consonants

  (and induces violations of ID [+son])

Why M-Lenition Debuccalizes Fricatives and P-Lenition does not

Input: asa

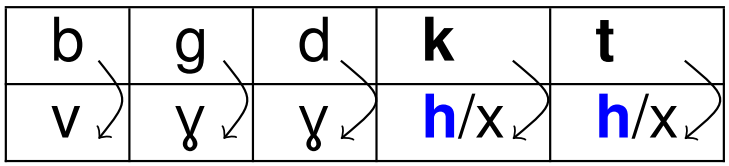
	RM	V_V⇒B	ID [+son]
a. asa		*!	
☞ b. aza			
c. aha			*!

Input: x_{ap} + [ap:x^{1} +cont –vc COR] (sa ⇒ ha)

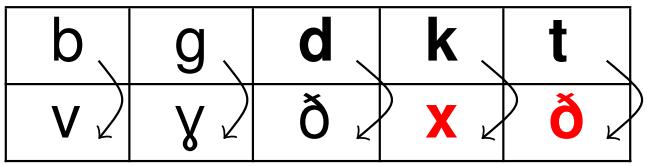
	RM	V_V⇒B	ID [+son]
a. [ap:x +cont –vc COR] (s)	*!		
b. [ap:x +cont +vc COR] (z)	*!		
☞ c. [ap:x^{2} +cont –vc COR **LAR**] (h)		*	*

M-Lenition Debuccalizes Aspirated Stops
P-Lenition does not

M-Lenition



P-Lenition



Why M-Lenition Debuccalizes Aspirated Stops and P-Lenition does not

- In M-Lenition, debuccalization is the only way to augment aperture and to maintain the laryngeal gesture of the aspirated stop as the friction of [h]
- P-Lenition voices aspirated stops across the board which cannot be acchieved by debuccalization

(Non-)Debuccalization of Aspirated Stops

Input: x_{ap} + [ap:x^1 –vc --**son** DOR **LAR**] (k^ha ⇒ xa/ha)

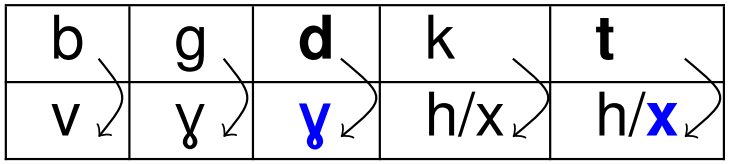
	RM	ID [+cont]	ID [+son]	MAX LAR
a. [ap:x^1 –vc –son DOR LAR] (k^h)	*!			
☞ b. [ap:x^1 –vc **–son** DOR] (x)		*	*	
☞ c. [ap:x^2 –vc +son DOR **LAR**] (h)		*		*

Input: aka

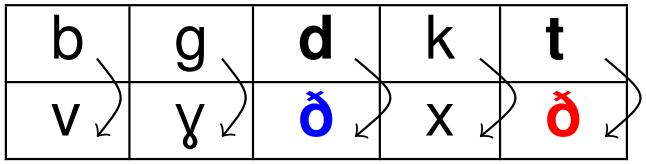
	RM	V_V⇒B	V_V⇒F	ID [+cont]	ID [+son]	MAX LAR
a. aka		*!	*			
☞ a. aga			*			*
☞ d. aɣa				*		*
b. aha		*!		*	*	

M-Lenition Changes Coronals to Dorsals
P-Lenition does not

M-Lenition



P-Lenition



Why M-Lenition Changes Coronal [d] to Dorsal [ɣ] and P-Lenition does not

- M-Lenition cannot change d into voiced coronal fricatives which are excluded at the beginning of the word by Z $\Rightarrow$ V_
  PoA change serves as an evasive maneuver

- P-Lenition can change to ð/z
  since these are licensed in intervocalic position

(Non-)Change of PoA: [d] ⇒ [ɣ]

Input: x_{ap} + [ap:x^{1} -cont COR] (da ⇒ ɣa)

	RM	Z⇒V_	V_V⇒F	MAX COR
a. [ap:x^{1} –cont COR] (d)	*!			
b. [ap:x^{2} +cont COR] (ð)		*!		
☞ c. [ap:x^{2} +cont DOR] (ɣ)				*

Input: ada

	RM	Z⇒V_	V_V⇒F	MAX COR
a. ada			*!	
☞ b. aða				
c. aɣa				*!

Why M-Lenition Changes Coronal [t] to Dorsal [x] and P-Lenition Changes [t] to [ð]

- M-Lenition cannot change [t] into [s] due to IDENT [+strid] (and [ð]/[z] are excluded at the left word edge)
  PoA change serves as an evasive maneuver

- P-Lenition can change to ð
  since this is licensed in intervocalic position

(Non-)Change of PoA: [t] ⇒ [x]

Input: x_{ap} + [ap:x^1 -cont COR] (ta ⇒ xa)

	RM	ID [+strid]	Z⇒V_	V_V⇒F	MAX COR
a. [ap:x^1 –cont COR] (t)	*!				
b. [ap:x^2 +cont COR] (ð)			*!		
b. [ap:x^2 +cont COR] (s)		*!			
☞ c. [ap:x^2 +cont DOR] (x)					*

Input: ata

	RM	ID [+strid]	Z⇒V_	V_V⇒F	MAX COR
a. ata				*!	
b. aza		*!			
☞ b. aða					
c. axa					*!

Summary

- Special features of M-lenition follow either from the phonological representation of the mutation morpheme. . .
- or the word-initial locus of M-mutation
- No special assumptions about lexical representation are necessary

References

Bermudez-Otero, R. (2009) Stratal Optimality Theory, Ms. University of Manchester.

Broderick, G. (1985) A handbook of late spoken Manx. Vol. 3 Phonology. Tübingen: Niemeyer.

de Lacy, P. (2002) The Formal Expression of Markedness. PhD thesis, UMass Amherst.

Gnanadesikan, A. (1997) Phonology with Ternary Scales. PhD thesis, UMass Amherst.

Green, Antony D. (1997) The Prosodic Structure of Irish, Scots Gaelic, and Manx. Ph.D. dissertation, Cornell University.

Green Antony D. (2006) The independence of phonology and morphology: The Celtic mutations, Lingua 116 (11), 1946-1985.

Stonham, J. (1994) Combinatorial Morphology. Amsterdam: Benjamins.

Trommer, J. (2008) Voicing and Polarity in Luo. Ms., University of Leipzig.

Trommer, J. (2009) Chain-shifting Mutation in Irish and Multi-valued Features, Talk at OCP 6, Edinburgh, January 2009. Slides under http://www.uni-leipzig.de/~jtrommer/papers/talks.html

van Oostendorp, M. (2004). Phonological recoverability in dialects of Dutch. Ms., Meertens Institute, Amsterdam.